REMARKS/ARGUMENTS

Claims 10-21 are currently pending in this application. Figure 1 has been amended in response to the Examiner's rejection of claims 10-15 under 35 U.S.C. 112, first paragraph. The Applicants submit that no new matter has been introduced into the application by the amendment of Figure 1.

Telephonic Interviews

The Examiner is thanked for granting a telephonic interview with the Applicant's representative on May 24, 2007. An Interview Summary mailed June 6, 2007 has been received. During the interview, the Applicants' representative argued that the finality of the April 16, 2007 Office Action was premature and should be withdrawn because the Examiner added new rejections that were not based on the Applicants' claim rejections. The Examiner disagreed. Furthermore, the Examiner indicated that basis for the rejection of claims 10-15 under 35 U.S.C. 112, first paragraph, was due to the fact that Figure 1 of the application was not technically accurate. The Examiner indicated that this rejection could be overcome by amending Figure 1. Additionally, the Applicants' representative argued that U.S. Patent No. 6,987,729 by Gopalakrishnan et al. fails to teach or suggest the computation of interference levels of a new candidate user, but rather teaches the computation of total received signal strength. The Examiner asserted that total received signal strength was equivalent to interference levels. The Applicants' representative disagreed. Finally, the Applicants' representative argued that the Examiner mistakenly asserted on page 5, lines 3-5 of the April 16, 2007 Office Action that columns 31-36 of Gopalakrishnan et al. teach the features of step (a) of claim 10. The Applicants' representative pointed out that U.S. Patent No. 6,987,729 only has 14 columns, and thus it was not possible to fully understand the Examiner's basis for the rejection.

Additional telephonic interviews were held with the Examiner's supervisors (Joseph Feild on May 31, 2007, and Rafael Perez on June 8, 2007 and June 13, 2007). During the June 13, 2007 telephonic interview, the Examiner's supervisor (Rafael Perez) agreed that the finality of the April 16, 2007 Office Action should be withdrawn (to be indicated on an Interview Summary) and that a Reply to the April 16, 2007 Office Action would be entered and fully considered by the Examiner.

The Present Invention

The present invention is a method of simulating the performance of a communication system which supports transmissions that are received and transmitted by a plurality of users. The possible realizations of a system configuration are simulated by performing a plurality of snapshots at specific instances of time.

In one embodiment, a current snapshot is started with an empty simulated system where no user is present. A new candidate user is selected for consideration of admission to the simulated system. Interference levels of the new candidate user are computed and a first algorithm is invoked to determine whether the new candidate user should be admitted in the simulated system based upon the computed interference levels. If the first algorithm determines that the new candidate user should be admitted in the simulated system, at least one timeslot is allocated to the new candidate user, a transmission power level is computed for the new candidate user based on the computed interference levels, and a power balancing process is performed. If there are any additional new candidate users to consider for admission to system and, if so, the above procedure is repeated. The current snapshot ends if there are no more new candidate users to consider for admission to the simulated system.

In another embodiment, the simulated system is already being used by a plurality of admitted users during a current snapshot of the simulated system. Interference levels of the new candidate user are computed based on transmission power levels of the admitted users. A first algorithm is invoked to determine whether the new candidate user should be admitted in the simulated system based upon the computed interference levels and the transmission power levels of the admitted users.

Double Patenting Rejection

Claims 10-21 are rejected under the judicially created doctrine of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-14 of U.S. Patent No. 6,704,286 (Zeira et al., hereafter referred to as Zeira). The Applicants respectfully request that the Examiner cite this reference on a Notice of References Cited (Form PTO-892). The Examiner asserts that "all the limitations of claims 10-21 are broadly encompassed by the limitation of claims 1-14 of the U.S. Patent No. 6,704,286." The Applicants respectfully disagree and request that if the Examiner is to maintain this rejection, the Examiner should provide an analysis that clearly explains where each of the claimed features of the instant application are taught or suggested by Zeira.

Zeira discloses modeling of hybrid time-code division multiple access communication systems. None of claims 1-14 of Zeira teach or suggest starting a current snapshot with an empty simulated system where no users are present, as recited in claim 10 of the instant application. The snapshots disclosed by Zeira always have a plurality of user equipments (UEs) and base stations. Furthermore, none of claims 1-14 of Zeira teach or suggest invoking a first algorithm to determine whether a new candidate user should be admitted in a simulated system based upon computed interference levels, allocating at least one timeslot to a new candidate user, and performing a power balancing process to update the transmission power levels of all users admitted in the simulated system, as recited in each of the independent claims 10 and 16 of the instant application.

Based on the arguments presented above, the withdrawal of the nonstatutory obviousness-type double patenting rejection of claims 10-21 is respectfully requested.

***Claim Rejections - 35 USC* § 112**

Claims 10-15 are rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the enablement requirement. The Examiner asserts that claim 10 contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The Applicants strongly disagree and submit that every claimed feature and every step of Figure 1 is fully described in the specification of the instant specification such that one of ordinary skill in the art would be able to understand and use the present invention. However, the Applicants have amended Figure 1 to address issues raised by the Examiner regarding a contradiction between blocks 11 and 12.

In accordance with the present invention, when a first new candidate user is being considered for admission into the empty system (no other user in the system), the total interference level (or, more accurately, the interference-plus-noise level) is equal to just the thermal noise. So the transmission power of the first user is calculated based on its total interference level which is equal to the thermal in this case since there is no interference generated by other users.

Block 12 of Figure 1 has been amended by deleting the phrase "using transmission powers of already admitted users". However, the Examiner is respectfully directed to review paragraph [0025] of the instant specification, where on lines 3-5 it is disclosed that the transmission powers of already admitted users (if any) are used to perform this computation. Thus, transmission powers of already admitted users (if any) may be used to compute the interference levels. Other changes have been made to Figure 1 to clarify the invention, as fully disclosed in the instant specification.

Based on the arguments presented above, the Applicants respectfully request that the rejection of claims 10-15 under 35 U.S.C. §112, first paragraph, be withdrawn.

Claim Rejections - 35 USC § 103(a)

Claims 10, 11, 15-17 and 21 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,987,729 (Gopalakrishnan et al., hereinafter referred to as Gopalakrishnan). Claims 12-14 and 18-20 are rejected under 35 U.S.C. §103(a) as being unpatentable over Gopalakrishnan in view of U.S. Patent Application Publication No. 2003/0060209 (Bruin et al.).

Gopalakrishnan discloses a method and apparatus for admission management in wireless communication systems.

Regarding claim 10, Gopalakrishnan fails to disclose a method comprising simulating possible realizations of a system configuration by performing a plurality of snapshots at specific instances of time, wherein steps (a)-(g) are performed for each snapshot. The Applicants have reviewed the portions of Gopalakrishnan that the Examiner asserts teaches this feature. The methodology step 303 of Figure 3 discloses a method step of evaluating a job priority queue. However, claim 10 requires that steps (a)-(g) be performed for each snapshot. There is no disclosure by Gopalakrishnan of performing a snapshot for which all of steps (a)-(g) of claim 10 are performed at specific instances of time.

The Examiner asserts that Gopalakrishnan discloses the evaluation of a job priority queue and the selection of a new candidate user for consideration of admission to a system by being entered into the queue with respect to steps (a) and (b). However, the Examiner fails to point out where Gopalakrishnan discloses computing interference levels of the new candidate user, as recited in step (c) of claim 10. The Examiner relies on column 7, lines 6-63 which discloses calculations performed to determine a frame error rate (FER) and a data rate (also see Figure 2, blocks 208-213 of Gopalakrishnan). The Examiner further relies on column 8, line 50 through column 9, line 6 which discloses computing received signal strength.

As disclosed in lines 7-11 of paragraph [0024] on page 5 of the instant specification, an interference level is interference that is perceived in a given timeslot. The Applicants submit that one of ordinary skill in the art would understand that an interference level is not the same as received signal strength, as incorrectly asserted by the Examiner.

Finally, the Applicants and the Examiner agree that Gopalakrishnan fails to teach or suggest computing a transmission power level for the new candidate user based on the computed interference levels, as recited in substep (e2) of claim 10. The Examiner fails to provide any reasonable explanation regarding why such a feature would be obvious in view of the teaching of Gopalakrishnan.

Regarding the Examiner's rejection of claims 11-15, these claims are dependent upon claim 10, and are believed to be allowable for the same reasons presented above.

Regarding claim 16, Gopalakrishnan fails to disclose a method comprising simulating possible realizations of a system configuration by performing a plurality of snapshots at specific instances of time, wherein steps (a)-(f) are performed for each snapshot. The Applicants have reviewed the portions of Gopalakrishnan that the Examiner asserts teaches this feature. The methodology step 303 of Figure 3 discloses a method step of evaluating a job priority queue. However, claim 16 requires that steps (a)-(f) be performed for each snapshot. There is no disclosure by Gopalakrishnan of performing a snapshot for which all of steps (a)-(f) of claim 16 are performed at specific instances of time.

The Examiner asserts that Gopalakrishnan discloses the evaluation of a job priority queue and the selection of a new candidate user for consideration of admission to a system by being entered into the queue with respect to step (a). However, the Examiner fails to point out where Gopalakrishnan discloses computing interference levels of the new candidate user based on transmission power levels of the admitted users, as recited in step (b) of claim 16. The Examiner relies on column 7, lines 6-63 which discloses calculations performed to determine a frame error rate (FER) and a data rate (also see Figure 2, blocks 208-213 of Gopalakrishnan). The Examiner further relies on column 8, line 50 through column 9, line 6 which discloses computing received signal strength.

As disclosed in lines 7-11 of paragraph [0024] on page 5 of the instant specification, an interference level is interference that is perceived in a given timeslot. The Applicants submit that one of ordinary skill in the art would understand that an interference level is not the same as received signal strength, as incorrectly asserted by the Examiner.

Finally, the Applicants and the Examiner agree that Gopalakrishnan fails to teach or suggest computing a transmission power level for the new candidate user based on the computed interference levels, as recited in substep (d2) of claim 16. The Examiner fails to provide any reasonable explanation regarding why such a feature would be obvious in view of the teaching of Gopalakrishnan.

Regarding the Examiner's rejection of claims 17-21, these claims are dependent upon claim 16, and are believed to be allowable for the same reasons presented above.

In view of the arguments presented above, the withdrawal of the rejection of claims 10-21 under 35 U.S.C. §103(a) is respectfully requested.

Conclusion

If the Examiner believes that any additional minor formal matters need to be addressed in order to place this application in condition for allowance, or that a telephone interview will help to materially advance the prosecution of this application, the Examiner is invited to contact the undersigned by telephone at the Examiner's convenience.

In view of the foregoing amendment and remarks, the Applicants respectfully submit that the present application, including claims 10-21, is in condition for allowance and a notice to that effect is respectfully requested.

Respectfully submitted,

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SW/bbf/yil
Enclosure

Amendments to Drawings:

The attached sheet of drawings includes changes to Figure 1. This sheet, which includes Figure 1, replaces the original sheet including Figure 1. The following changes have been made to Figure 1:

In block 11, "WITH EMPTY SYSTEM" has been changed to --WITH AN EMPTY SYSTEM".

In block 12, "PICK A NEW CANDIDATE USER. COMPUTE INTERFERENCE LEVELS OF THIS USER IN EACH TIME SLOT, USING TRANSMISSION POWERS OF ALREADY ADMITTED USERS." has been changed to --PICK A NEW CANDIDATE USER AND COMPUTE INTERFERENCE LEVELS OF THE NEW CANDIDATE USER IN EACH TIME SLOT.--.

In block 13, "INVOKE CAC ALGORITHM FOR THE NEW CANDIDATE USER, USING THE COMPUTED INTERFERENCE LEVELS (IN STEP 12)." has been changed to --INVOKE A CAC ALGORITHM FOR THE NEW CANDIDATE USER USING THE COMPUTED INTERFERENCE LEVELS.--.

In decision diamond 14, "USER IS ADMITTED IN SYSTEM BY CAC ALGORITHM?" has been changed to --HAS THE NEW CANDIDATE USER BEEN ADMITTED IN THE SYSTEM BY THE CAC ALGORITHM?--.

In block 15, "CAC" has been changed to --THE CAC--, and "ON COMPUTED" has been changed to --ON THE COMPUTED--.

In block 16, "TRANSMISSION POWERS OF ALL ADMITTED USERS ARE UP DATED." has been deleted.

In block 17, "AT LEAST ONE REMAINING USER IN SNAPSHOT?" has been changed to --IS THERE AT LEAST ONE OTHER NEW CANDIDATE USER TO BE INTRODUCED TO THE SYSTEM?--.